The Claims

What is claimed is:

1. A sensing method comprising the steps of:

providing a Fabry-Perot cavity, including pair of partially transmissive, partially reflective, surfaces wherein a first of said surfaces is flexibly suspended adjacent and parallel to a second of said surfaces so that a gap exists therebetween;

providing a source of variable electrostatic potential for providing a selected electrostatic potential between said first and second surfaces so that said gap is adjustable;

providing a translucent chemical layer on said flexibly suspended first surface;

providing a photosensor attached to said second surface outside of said gap; and

providing a source of light, said light for irradiating said photosensor through said porphyrin layer and said first and second surfaces wherein said light is also partially reflected between said surfaces;

providing a sensing environment wherein an agent undergoes a reaction with said chemical layer and a sensing environment wherein said reaction does not occur;

measuring a change in spectrum of an output of said photosensor between said sensing condition wherein said agent undergoes said reaction with said chemical layer and said sensing condition wherein said reaction does not occur; and

measuring a change in spectral intensity of said output of said photosensor between said sensing condition wherein said agent undergoes said reaction with said chemical layer and said sensing condition wherein said reaction does not occur;

wherein said gap and said light are selected to provide a desired output of said photosensor.

2. A sensing method according to claim 1 wherein said steps of

providing a Fabry-Perot cavity;

providing a source of variable electrostatic potential;

providing a translucent porphyrin layer;

providing a photosensor;

providing a source of light;

measuring a change in spectrum; and

measuring a change in spectral intensity

are provided on an integrated circuit.

3. A sensing method comprising the steps of:

providing a Fabry-Perot cavity, including pair of partially transmissive, partially reflective, surfaces wherein a first of said surfaces is flexibly suspended adjacent and parallel to a second of said surfaces so that a gap exists therebetween;

providing a source of variable electrostatic potential for providing a selected electrostatic potential between said first and second surfaces so that said gap is adjustable;

providing a translucent porphyrin layer on said flexibly suspended first surface;

providing a photosensor attached to said second surface outside of said gap; and

providing a source of light, said light for irradiating said photosensor through said porphyrin layer and said first and second surfaces wherein said light is also partially reflected between said surfaces;

providing a sensing environment wherein an agent undergoes a reaction with said porphyrin and a sensing environment wherein said reaction does not occur;

measuring a change in spectrum of an output of said photosensor between said sensing condition wherein said agent undergoes said reaction with said porphyrin and said sensing condition wherein said reaction does not occur; and

measuring a change in spectral intensity of said output of said photosensor between said sensing condition wherein said agent undergoes said reaction with said porphyrin and said sensing condition wherein said reaction does not occur;

wherein said gap and said light are selected to provide a desired output of said photosensor.

4. A sensing method according to claim 3 wherein said steps of

providing a Fabry-Perot cavity;

providing a source of variable electrostatic potential;

providing a translucent porphyrin layer;

providing a photosensor;

providing a source of light;

measuring a change in spectrum; and

measuring a change in spectral intensity

are provided on an integrated circuit.

5. The method of claim 3 wherein said first partially transmissive, partially reflective, surface is a gold surface.

6. The method of claim 3 wherein said photosensor is a photodiode.

7. The method of claim 3 wherein said source of light is a laser.

8. The method of claim 7 wherein said laser is band limited laser.

9. The method of claim 7 wherein said laser is of a variable wavelength.

10. A sensing method comprising the steps of:

providing a Fabry-Perot cavity, including pair of partially transmissive, partially reflective, surfaces wherein a first of said surfaces is flexibly suspended adjacent and parallel to a second of said surfaces so that a gap exists therebetween;

providing a source of variable electrostatic potential for providing a selected electrostatic potential between said first and second surfaces so that said gap is adjustable;

providing a translucent mettaloporphyrin layer on said flexibly suspended first surface;

providing a photosensor attached to said second surface outside of said gap; and

providing a source of light, said light for irradiating said photosensor through said mettaloporphyrin layer and said first and second surfaces wherein said light is also partially reflected between said surfaces;

providing a sensing environment wherein an agent undergoes a reaction with said mettaloporphyrin and a sensing environment wherein said reaction does not occur;

measuring a change in spectrum of an output of said photosensor between said sensing condition wherein said agent undergoes said reaction with said mettaloporphyrin and said sensing condition wherein said reaction does not occur; and

measuring a change in spectral intensity of said output of said photosensor between said sensing condition wherein said agent undergoes said reaction with said mettaloporphyrin and said sensing condition wherein said reaction does not occur;

wherein said gap and said light are selected to provide a desired output of said photosensor.

11. A sensing method according to claim 10 wherein said steps of

providing a Fabry-Perot cavity;

providing a source of variable electrostatic potential;

providing a translucent porphyrin layer;

providing a photosensor;

providing a source of light;

measuring a change in spectrum; and

measuring a change in spectral intensity

are provided on an integrated circuit.

12. The method of claim 10 wherein said first partially transmissive, partially reflective, surface is a gold surface.

13. The method of claim 10 wherein said photosensor is a photodiode.

14. The method of claim 10 wherein said source of light is a laser.

15. The method of claim 14 wherein said laser is band limited laser.

16. The method of claim 15 wherein said laser is of a variable wavelength.